

A Spatio-Temporal Analysis of Households By Source of Drinking Water in Parbhani District Of Maharashtra, India- A Decadal Changes (2001-2011)

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Introduction

Drinking water is the main necessity of human life. Government has come out with various programmes of supply of drinking water in rural areas of Parbhani district. The supply and demand factors increase with the natural and human factors like increase of population and decrease of sources of available of drinking water. Decline in groundwater table and availability of surface water, has put large number of people in risk of drinking water particularly in rural areas in summer season. The National Water Policy 2002 reflects the significance attached to drinking water by stating that, 'adequate safe drinking water facilities should be provided to the entire population of the society.' Through the implementation of number of programmes and plans like Mini Water Supply Scheme (MWSS), Jal- Nirmal Project, Pipes Water Supply (PWS), Tube well with Hand pumps (TWHP) etc. the supply of safe drinking water has increased from 2001-2011, but with the increasing of population and decreasing of groundwater level, Central and State governments are not succeed with 100 percent to supply of adequate amount of safe drinking water to all the people of the study area. The Government of Maharashtra has implemented various schemes for improving the water supply. Government Agencies, World Bank and other NGOS are actively involved in Implementing Water Supply Scheme In Maharashtra's Rural Area.

Objectives

The present study has been undertaken with main objectives of the study region are as follows.

1. To examine the status of rural drinking water availability in the study region.
2. To know the sources of tahsil wise rural water supply.
3. To find out decadal changes of tahsil wise rural drinking water supply in study region.

Hypothesis

The drinking water availability is insufficient in rural area of Parbhani District.

Scope Of The Study

Scope of study is limited to Maharashtra rural area to find drinking water availability in the rural area.

Study Area

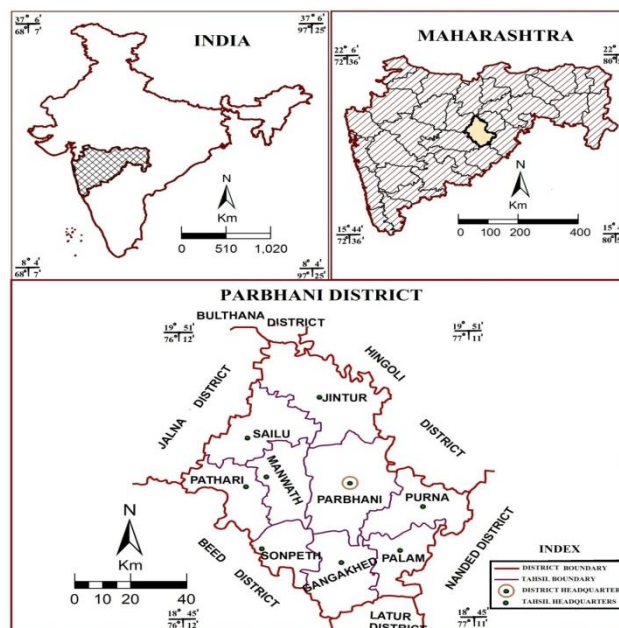
Parbhani district located in the central part of Marathwada region is selected for present study. It lies in Godavari river basin. It extends from 18° 45' North latitude to 20° 03' North latitude and 76° 12' East longitude 77° 29' East longitudes. The study region is bounded to the North by Buldhana and Hingoli district, west by Jalna, south by Beed and Latur and east by Nanded. It covers an area of 6214 KM² and has a total population of 1836086 as per the census 2011. It is divided into 09 administrations. These are Parbhani, Sailu, Jintur, Manwath, Pathri, Sonpeth, Gangakhed, Palam and Purna.

The Hills on the north east from part of the Ajanta Hill ranges which passes through Jintur tahsil. The hills on the southern side are the Balaghat hill ranges in Gangakhed tahsil. The district is at an average height of 457 meter from mean sea level.

Database and Methodology

This study is mainly conducted to find drinking water availability of rural area in Maharashtra also the analysis of the nature of drinking water. Water availability it has been secondary data has been used. Secondary data collected from ground water statistics, government of Maharashtra resources department and Maharashtra at a glance and internet data has been analysed with the help of statistical diagrams.

Location map of Parbhani District



RESULT AND DISCUSSION

The study region average rainfall is 804.4 mm. per year region suffers from lack of availability of water for drinking as well as agricultural purpose. The government of Maharashtra has implemented various schemes for improving the water supply scheme in rural area in the present study area.

Table 1 Sources of rural water supply
Sources of Drinking Water (%)

Sources	Tp	Hp	Tw	W	T/P/L	R/C	Ss	O
2001	18.67	37.30	7.49	22.94	5.07	8.20	0.19	0.14
2011	21.30	24.54	15.19	26.12	2.25	9.70	0.90	0

References: Tp-Tap, Hp- Hand pump, Tw- Tube well, W-Well, T/P/L- Tank/Pond/Lake, R/C- River/ Canal, Ss- Spring, O- Any other sources.

Source: Census Handbook of Parbhani District 2001-2011

The State government has implemented various schemes for improving the water supply coverage over a period of time. The percentage of household depending on 'Tap' as the principal source of drinking water has increase in rural area. There are many sources of drinking water in the region like tap, hand pump, tube well, river/canal, tank/pond/lake, spring and other. Out of these hand pump is main source of drinking water in rural areas followed by the well and tap. The hand pumps 37.30%, well 22.94%, tap 18.67%, river/canal 8.20%, tube well 7.49%, tank/pond/lake 5.07% during 2001, In 2011 proportion of well 26.12%, hand pumps 24.54%, tap 21.30%, tube well 15.19%, river/canal 9.70% in the study region.

The proportion of tap, hand pumps and well sources are 78.91% decreased down from in 2001 to 71.96% in 2011. It is because of increased demand from growing population and depleted ground water level. Whereas the proportion of tube well, river/canal and tank/pond/lake sources are increased from 21.09% in 2001 to 28.04% in 2011. Godavari, Dudhana and Purna river link projects located in surrounding tahsils of study region. Provide available water of rural area.

The hand pump water is the main source of drinking water (37.30%) in region whereas well (22.94%), tap(18.67%) ,river/canal (8.20%) and tube well (7.49%) are other sources of drinking water. Tube well with hand pump (TWHP) etc. the supply of safe drinking water has increased from 2001-2011, but with the increasing of population and decreasing of ground water level. The supply and demands factors increase with the natural

and human factors like increase of population and decrease of sources of available of drinking water. Decline in ground water table and availability of surface water, has put large number of people in risk for drinking water particularly in rural areas in summer season.

Table 2. Decadal changes of sources of drinking water supply in rural areas of Parbhani district: Distribution of households by sources of drinking water 2001 (%)

2001										
Sr. No.	Tahsil	House Holds	Sources of drinking water (%)							
			Tp	Hp	Tw	W	T/P/L	R/C	Ss	O
1	Sailu	18782	20.48	41.90	4.29	23.81	1.43	8.09	0.0	0.0
2	Jintur	36488	18.25	35.52	5.11	33.09	5.84	2.19	0.0	0.0
3	Parbhani	37450	23.85	38.53	11.31	11.00	3.06	11.63	0.31	0.31
4	Manwath	13089	19.76	27.78	6.17	24.07	12.96	9.26	0.0	0.0
5	Pathri	15584	20.75	35.22	3.77	25.16	5.03	8.18	1.26	0.63
6	Sonpeth	11089	13.74	42.75	8.40	16.79	1.53	16.79	0.0	0.0
7	Gangakhed	23388	22.14	38.93	10.69	18.32	1.91	8.01	0.0	0.0
8	Palam	17403	11.93	45.45	6.82	19.89	3.98	11.93	0.0	0.0
9	Purna	22947	13.23	32.35	8.82	28.68	9.93	6.25	0.37	0.37
Total District		196170	18.67	37.30	7.49	22.94	5.07	8.20	0.19	0.14

References: Tp-Tap, Hp- Hand pump, Tw- Tube well, W-Well, T/P/L- Tank/Pond/Lake, R/C- River/ Canal, Ss- Spring, O- Any other sources.

Source: Census Handbook of Parbhani District 2001

Table 3. Decadal changes of sources of drinking water supply in rural areas of Parbhani district: Distribution of households by sources of drinking water 2011(%)

2011										
Sr. No.	Tahsil	House Holds	Sources of drinking water (%)							
			Tp	Hp	Tw	W	T/P/L	R/C	Ss	O
1	Sailu	25054	25.61	22.56	11.58	27.44	2.44	10.06	0.31	0.0
2	Jintur	48061	22.16	22.66	14.10	26.85	5.88	6.22	0.17	0.0
3	Parbhani	44934	22.6	24.8	14.4	25.2	0.6	10.8	1.6	0.0
4	Manwath	21249	22.28	25.54	8.70	28.80	0.55	12.5	1.63	0.0
5	Pathri	18339	21.20	25.35	14.29	25.34	0.46	12.90	0.46	0.0
6	Sonpeth	15058	20.75	21.16	17.01	22.82	1.66	14.11	2.49	0.0
7	Gangakhed	31012	19.55	25.50	22.03	25.50	1.73	4.95	0.74	0.0
8	Palam	24232	16.72	25.08	16.08	26.05	2.57	11.90	1.61	0.0
9	Purna	28460	19.88	25.60	15.66	27.11	0.90	10.85	0.0	0.0
Total District		256399	21.30	24.54	15.19	26.12	2.25	9.70	0.90	0.0

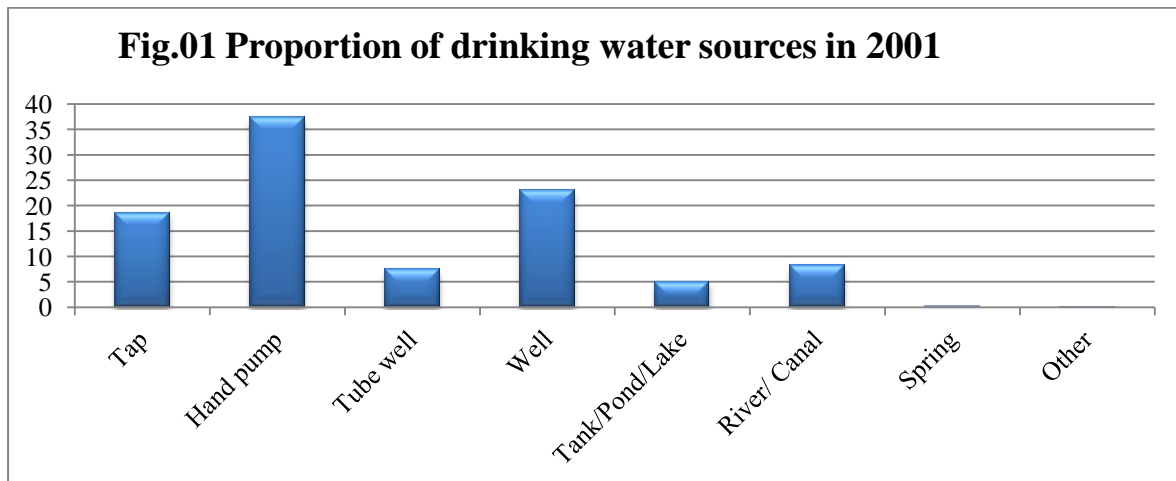
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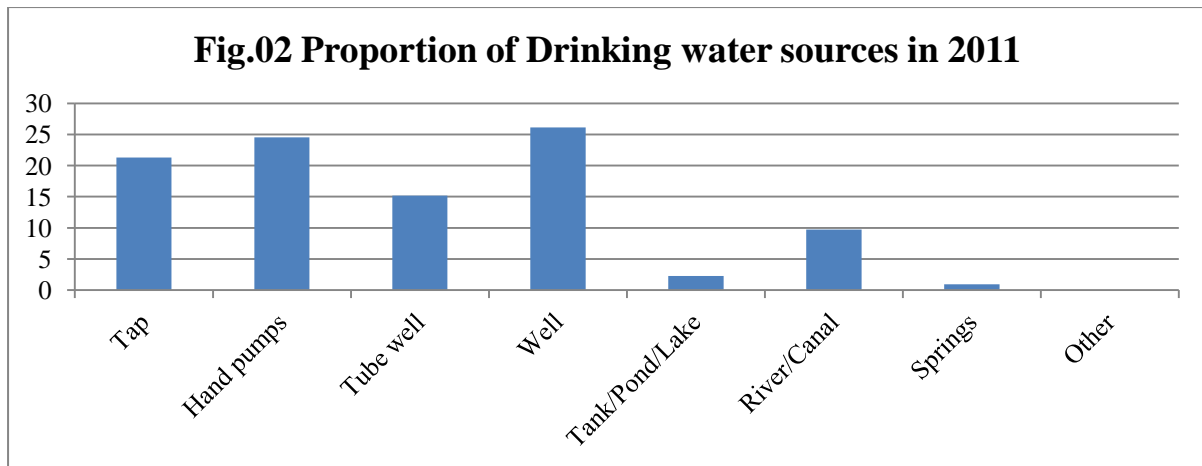
Source: Census Handbook of Parbhani District 2011

Source of rural water supply

In study region, the proportion of rural households covered by the public water supply sources such as taps (under mini water supply- MWS), hand pumps and wells decreased from 78.91% in 2001 to 71.96% in 2011(Table 2-3). Due to decreasing of underground water level, the government of Maharashtra is given more importance to provide safe drinking water by tap and tube well to rural people of the study area. The supply of drinking water from tube well, river/canal and tank/pond/lake has increased from 21.09% in 2001 to 28.04% in 2011. Godavari, Dudhana and Purna river link middle project located in surrounding tahsils of study region. Provide available water to the rural area. (Table no.1) table no.2 reveals the distribution of households by sources of drinking water in 2001 and 2011of the study area. The average supply of hand pump water is 37.30%. The hand pump water supply has major in all tahsils rages 27.77 to 45.45% in 2001. In 2011 average hand pump water supply 24.54% and ranges between 21.16 to 25.60% in 09 tahsils. Among 09 tahsils are covered by study region it is because of Godavari, Dudhana and Purna river link project located in the region and provides available water the rural area.



The average well water supply is 22.94%. Jintur followed by Purna and Pathri tahsil top rank and Sonpeth, Parbhani tahsils low rank of well water source in region during 2001. And 2011 the average well water supply is 26.12%. Manwath followed by Sailu and Purna tahsil top rank and Sonpeth , Parbhani tahsils low rank of well water source in study region.



Decadal changes: table 02 and 03 indicates that hand pump and tank/pond/lake sources are decreased down -12.76 and -2.82% respectively during 2001 to 2011. Whereas tap, tube well, well, river/canal and other sources increased 2.63, 7.7, 3.18, 1.5 and 0.17% respectively in the region during above period (Fig. 01 and Fig. 02)

This study is revealed the following points

1. Tap water supply is increased by 18.67 % to 21.30 % from 2001 to 2011. As well as water supply is increased by 22.94 % to 26.12 % from 2001 to 2011.
2. Both in 2001 and 2011 the households of the study areas are mainly covered by tap water supply.
3. Tap water supply is increased by 18.67% to 21.30% from 2001 to 2011.
4. Study area are depends on well for drinking water.

CONCLUSION

In the study region the status of water supply can be considered as satisfactory in terms of coverage at the habitations and in terms of service at the household. Maharashtra state has made progress in the supply of adequate and safe drinking water in the study region to its people, but gross disparity is exists in coverage of all talukas of Parbhani district. The Maharashtra state which adopted the reform processes ahead of many other states in the country has been steadily implementing various steps to improve water and sanitation service in rural areas. However, it can be argued that there is enormous scope for improvement.

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